

## **EXECUTIVE SUMMARY [NON-TECHNICAL ABSTRACT FOR PUBLIC INFORMATION OR PROGRAM**

**PROMOTION]:** State in **layman's terms** the application's broad, long-term objectives and specific aims, making reference to the potential public benefits of the project relevant to California.

The treatment of municipal wastewater is highly dependent on the activities of microbes that convert inflow into three valuable components: pathogen-free water, biosolids for composting, and methane gas that can provide energy for on-site power plants. Though the vast majority of modern treatment plants routinely meet regulatory standards for pathogen reduction, sufficient removal of nutrients in the water is becoming increasingly difficult owing to growing population pressure and limitations placed on discharges. Moreover, we are beginning to understand the environmentally disruptive potential of hormone-mimicking contaminants that pass through treatment plants into discharge waters. Utilizing a treatment system built with funds from the City of Santa Rosa, we have found that passage through aquatic vegetation in the terminal phase of the treatment process can remove substantial concentrations of residual nitrogen and phosphorous nutrients. In this proposal we wish to further investigate the ability of this vegetation to lower the estrogen-mimicking activity of the wastewater. Furthermore, to extract the energy that is stored in harvested vegetation, we will test this biomass as feedstock for biogas production in our laboratory and in field-scale biodigesters built with funds from the Bay Area Air Quality Management District. By helping to establish operational parameters for the aquatic treatment system and demonstrating productive uses for the harvested biomass, this project will promote the development of an integrated and sustainable biotechnology with potential application throughout California.